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FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

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| EXAMINER |
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WILLS, MONIQUE M

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1795

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10/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/719,056 | BERKOWITZ ET AL. | |
| | Examiner | Art Unit | |
| | Monique M. Wills | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-297 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-297 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed July 9, 2007. The following rejections are maintained:

- Claims 1-3, 5-13 & 18-23 & 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakanishi et al. U.S. Pat. 6,521,374.
- Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374.
- Claims 14-17 & 30-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374 in view of Tischer et al ("Candidate materials for the sulfur electrode current collector", Corrosion Science, Vol. 26, No. 5, pp. 371-375, 1986).
- Claims 14-17 & 30-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374 in view of Tischer et al ("Candidate materials for the sulfur electrode current collector", Corrosion Science, Vol. 26, No. 5, pp. 371-375, 1986).

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- Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374 as applied to claim 1 above, and further in view of Shembel et al. U.S. Pub. 2003/0031933.

However, claims 1-27 & 29-36 are rejected under 112 first paragraph.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-27 & 29-36 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The method of reducing the impedance is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). ***.It is unclear as to whether the battery having an impedance increased to less than 0.20 Ohms after the battery is dropped six times is a method limitation and it is unclear as to how such a limitation defines the battery structure. An appropriate correction is required.

Claim Interpretation

The term “ contact” is reasonable interpreted as electrical contact. The claim does not specify the type of contact necessary, and therefore it is reasonable to assume contact includes electrical contact as commonly illustrated in electrochemical arts.

The term “ lead” the term lead is interpreted as an conductive device that directs from battery electrodes. Therefore, the term “ lead” reasonable includes terminal leads and tab leads.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

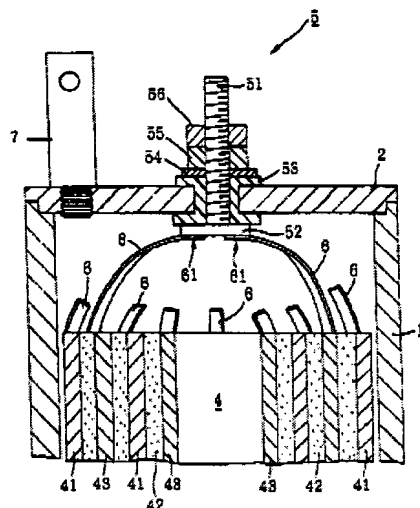
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1-3, 5-13 & 18-23 & 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakanishi et al. U.S. Pat. 6,521,374.

With respect to **claim 1**, Nakanishi et al. teach: an anode including a lithium-containing anode active material (col. 1, lines 5-10); a cathode (col. 1, lines 5-10); a separator therebetween (col. 4, lines 60-64); and a positive lead (51) including aluminum in contact with a portion of the cathode. See Figure 3, column 5, lines 37-41 and Claim Interpretation section above. The limitation with respect to a primary lithium battery, has been considered but has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

FIG. 3



With respect to claim 2, the lithium-containing anode active material is lithium or a lithium alloy. See column 1, lines 5-10.

With respect to claim 3, the aluminum alloy is a JIS 6000 series (col. 2, lines 50-60). See Table 8 where the cell is primarily Al, Mg and Si consistent with the definition set forth in paragraph 24 of the instant disclosure.

With respect to claims 5-10 & 13, the terminal lead includes the instant weight percent as set forth in Table 8 as follows:

TABLE 8

| | Mg (wt %) | Si (wt %) | Fe (wt %) | Cu (wt %) | Mn (wt %) | Cr (wt %) | Zn (wt %) | B (wt %) | Al (wt %) |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| INVENTION CELL 9 | 0.29 | 0.27 | 0.27 | 0.05 | 0.02 | 0.02 | 0.05 | 0.03 | 99.00 |
| INVENTION CELL 10 | 0.44 | 0.40 | 0.40 | 0.08 | 0.02 | 0.02 | 0.08 | 0.06 | 98.50 |

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With respect to **claims 11 & 12**, the positive leads exemplified in Table 8 include 0 wt % titanium and 0wt% nickel, embracing the instant claims.

With respect to **claim 18**, the positive lead includes an extension (6) directed toward the cathode. See Figure 3.

With respect to **claims 19 & 20**, the positive lead includes 6 or more extensions directed toward the cathode. See Figure 3. Support for this assertion is provided in MPEP 2112.01, “ [where] [p]roducts of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, since teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

With respect to **claim 21**, the battery comprises a nonaqueous electrolyte in contacted with the anode, cathode and separator (col. 3 line 64– col. 4, line 20).

With respect to **claim 22**, the nonaqueous electrolyte includes an organic solvent (col. 4, lines 1–5).

With respect to **claim 23**, the nonaqueous electrolyte includes a perchlorate salt (col. 4, lines 10–13).

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With respect to **claim 25**, the battery is a cylindrical battery. See Figure 1.

With respect to **claims 26–28**, the impedance characteristics are an inherent characteristic of the prior art set forth, as Nakanishi teaches the same electrochemical components set forth by Applicant.

With respect to **claim 29**, the limitation concerning welding the positive lead to the cathode, is a process limitation in a product claim. “ [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Therefore, the limitation is satisfied as the products are structurally identical.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374.

Nakanishi et al. teach a positive lead as described in the rejection recited hereinabove, including, a terminal lead with weight percent as set forth in Table 8 as follows:

| TABLE 8 | | | | | | | | | |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| | Mg (wt %) | Si (wt %) | Fe (wt %) | Cu (wt %) | Mn (wt %) | Cr (wt %) | Zn (wt %) | B (wt %) | Al (wt %) |
| INVENTION CELL 9 | 0.29 | 0.27 | 0.27 | 0.05 | 0.02 | 0.02 | 0.05 | 0.03 | 99.00 |
| INVENTION CELL 10 | 0.44 | 0.40 | 0.40 | 0.08 | 0.02 | 0.02 | 0.08 | 0.06 | 98.50 |

However, the reference does not expressly disclose a 5000 series aluminum alloy.

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In accordance with the definition set forth in Table 1 of the instant disclosure, a 5000 series aluminum alloy may include Mg from 2.2 to 2.8% Mn 0.1 max and Silicon 0.25% max.

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the instant aluminum alloy, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch 617 F.2d 272, 205 USPO 215 (CCPA). The skilled artisan recognizes that the alloy composition directly effects electrically conductivity.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-17 & 30-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374 in view of Tischer et al ("Candidate materials for the sulfur electrode current collector", Corrosion Science, Vol. 26, No. 5, pp. 371-375, 1986).

Nakanishi et al. teach a lithium battery as described in the rejection recited hereinabove. With respect to **claim 30**, Nakanishi et al. teach: an anode including a lithium-containing anode active material (col. 1, lines 5-10); a cathode (col. 1, lines 5-10); a separator therebetween (col. 4, lines 60-64); and a positive lead (51) including aluminum in contact with a portion of the cathode. See Figure 3, column 5, lines 37-41 and Claim Interpretation section above. With respect to **claim 34**, the positive lead includes an extension (6) directed toward the cathode. See Figure 3. With respect to **claim 32**, Nakanishi includes a positive lead of 5000 series aluminum alloy as described hereinabove.

With respect to **claims 35 & 36**, the positive lead includes 6 or more extensions directed toward the cathode.

However, Nakanishi is silent to: an aluminum current collector (**claims 14 & 30**); a current collector that includes an aluminum alloy that is a 6000 series aluminum alloy (**claims 15, 16, 31 & 32**); including 0-0.4% by weight of chromium, 0.01-6.8% by weight of copper, 0.05-1.3% iron, 0.1-7% by weight of

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magnesium, 0-2 % by weight of manganese, and 0.2% by weight of silicon, 0.25% or less by weight of titanium, 0-2.3% by weight nickel, and 0-8.2% by weight zinc (claims 17 & 33).

The Tischer reference discloses a positive current collector for a battery comprising a 6061 aluminum alloy (See Experimental Method). A 6061 aluminum alloy embraces the instant composition necessitated by the instant claims.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Nakanishi battery to include a current collector that includes an aluminum alloy that is a 6000 series aluminum alloy, in order to utilize material that is highly corrosion resistant and has self-healing properties to collect current generated by the electrodes (See Tischer, pg. 375).

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. U.S. Pat. 6,521,374 as applied to claim 1 above, and further in view of Shembel et al. U.S. Pub. 2003/0031933.

Nakanishi teaches a positive electrode including a lithium containing composite oxide (co.. 3, lines 55-65). Nevertheless, the reference is silent to magnesium dioxide and vanadate.

However, Shembel et al. teach the equivalence of lithium containing complex oxides, vanadate and magnesium dioxide as cathode materials for lithium cells.

Therefore, because these two cathodic materials were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute vanadate or manganese dioxide for lithium composite containing oxide.

Response to Arguments

Applicants arguments with respect to the pending rejections are persuasive. However, the claim amendments are unclear. Specifically, the battery impedance limitation addressed in the 112 first paragraph rejection. It

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appears as though the rejections will be withdrawn once the 112 first paragraph rejection is overcome.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MW

9/28/07

A handwritten signature in black ink, appearing to be 'P. Ryan', written over the printed name.

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER